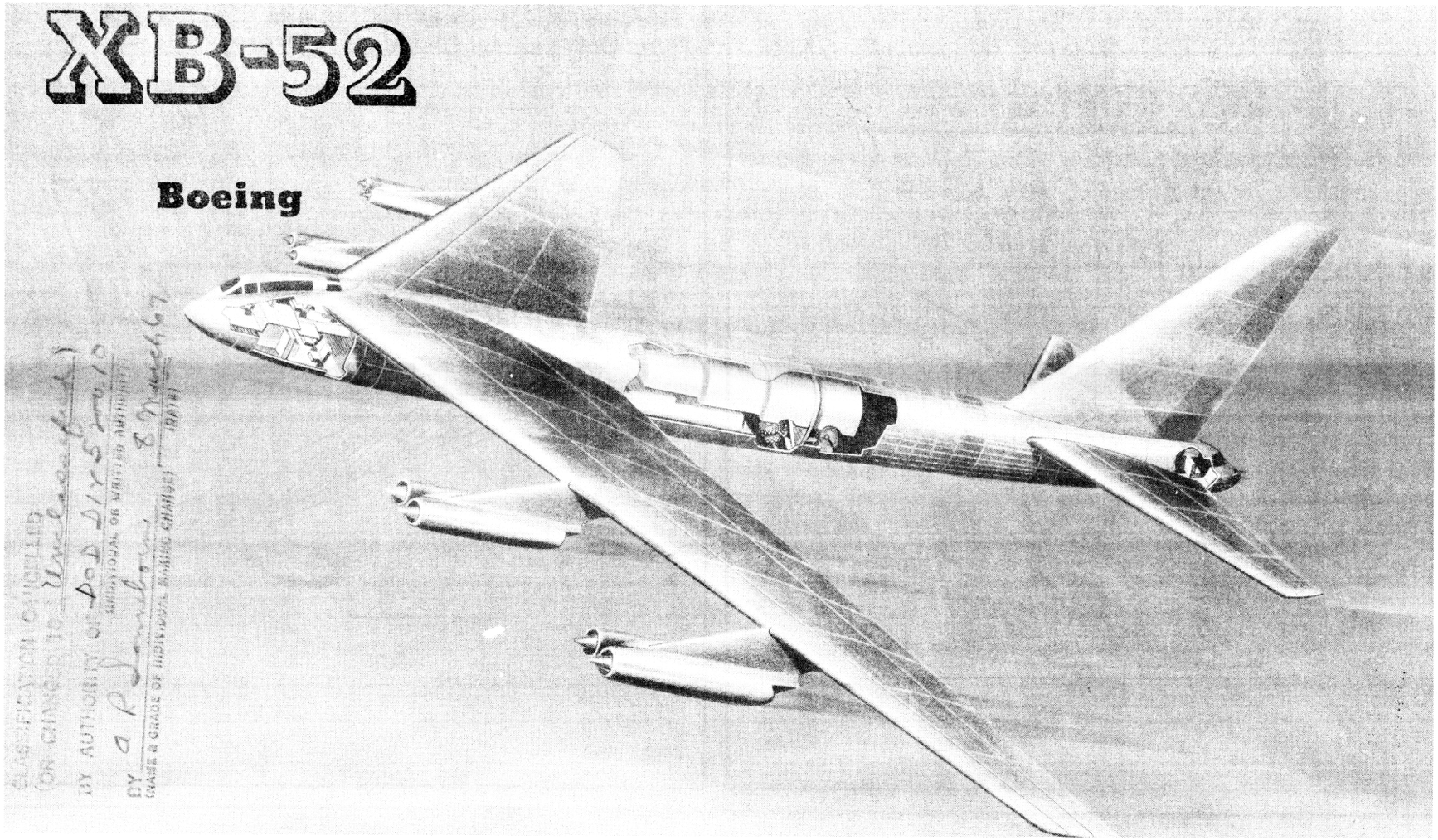
XB-52

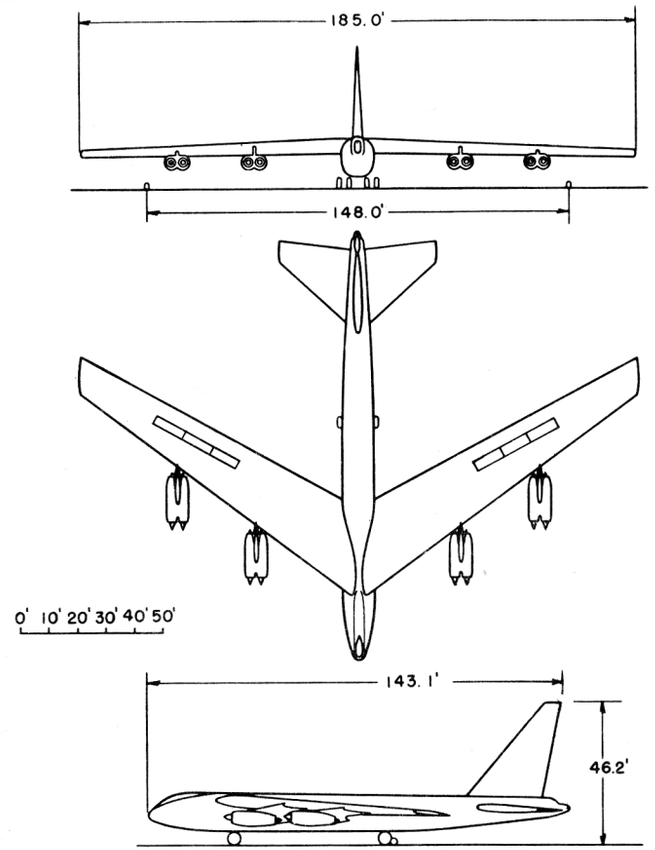


Standard Aircraft Characteristics

BY AUTHORITY OF
COMMANDING GENERAL
AIR MATERIEL COMMAND
U.S. AIR FORCE

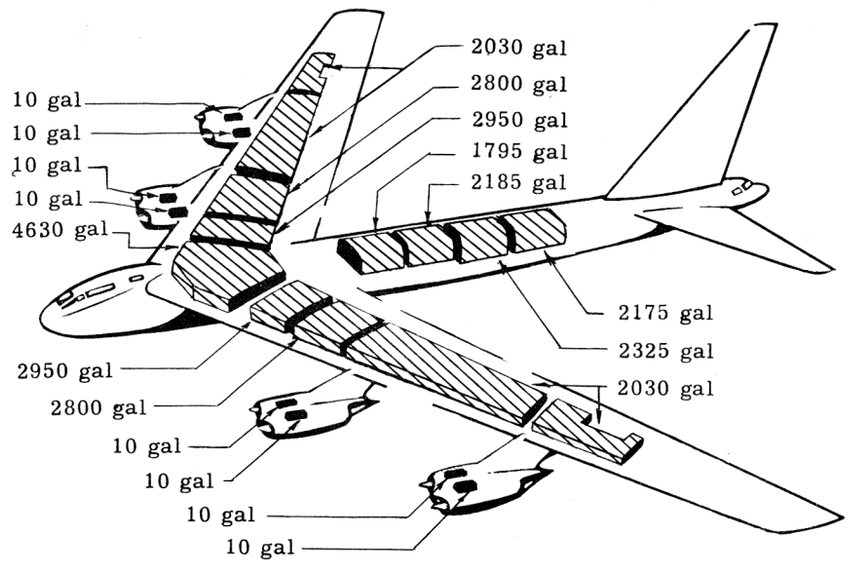
EIGHT XJ57-P-( )

PRATT WHITNEY

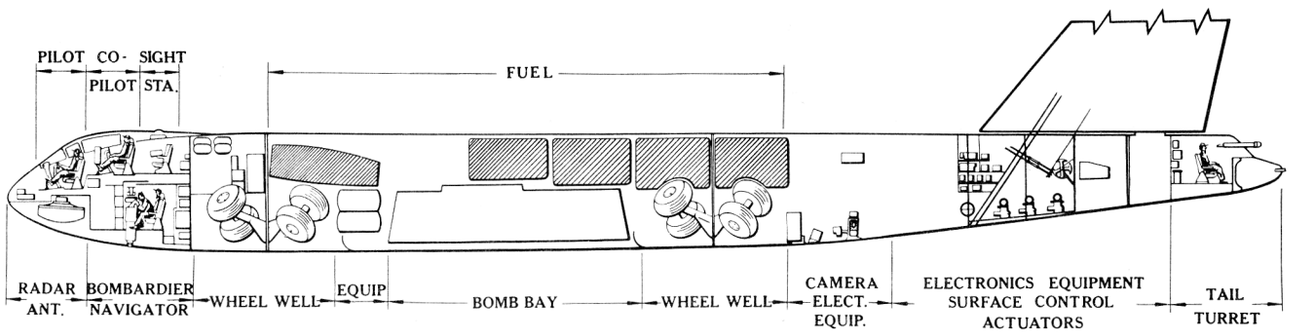


Wing Area ..... 4,000 sq ft
Aspect Ratio 8.55
M.A.C. ..... 275 in.

Wing Section
Root ..... BAC 208
Intermediate ..... BAC 207
Tip ..... BAC 206



Fuel Oil



POWER PLANT

No. & Model .....(8)XJ57-P-( )
Mfr. ..... Pratt-Whitney
Engine Spec. No. .....
Type ..... Axial Flow
Length ..... *178"
Dia. ..... *43"
Weight(dry) ..... *4600 lb

Note: See current engine status under MISSION and DESCRIPTION block.

*Based on XJ57-P-1

ENGINE RATINGS

S. L. Static	LB - RPM
Max:	9250 -
Mil:	9250 -
Nor:	8600 -

DIMENSIONS

Span ..... 185. 0'
Length ..... 143. 1'
Height ..... 46. 2'
Tread(outrigger) ..... 148. 0'

Mission and Description

The XB-52 is a long range, high altitude heavy bomber designed for the destruction of surface objectives.

The normal crew of five consists of pilot, co-pilot, radio operator, bombardier-navigator-weaponier, bombardier-navigator-weaponier and gunner.

Satisfactory control characteristics throughout the speed range from limit dive speed to landing speed are obtained by the use of spoilers, slats and flaps on the wing; also by all-movable horizontal and vertical tail surfaces.

Assisted take-off is provided by four liquid rocket units developing 4000 to 5000 lb thrust each for a max duration of 60 seconds. A braking parachute is provided for decreasing landing roll distance. A quadricycle landing gear is utilized.

Automatic cabin pressurization during normal and combat operation and automatic cabin heating and ventilating are provided for maximum crew comfort.

Development

Design initiated: 27 October 1948
Mock-up inspection: 26 April 1949
Engineering acceptance inspection: April 1951 (estimated)
First flight; 1st article (J40 engines), June 1951 (est) 2nd article, December 1951 (estimated)
Construction has been initiated.
First article (stripped) will utilize J40-WE-6 for preliminary flight tests. YJ57-P-3 will be installed in the second article. However, tentative plans call for reworking this engine into a future model of higher ratings as shown.

BOMBS

No.	Size	Type
1	25,000	S. A. P.
1	22,000	G. P.
1	13,000 (VB-13)	S. A. P.
1	12,000	G. P.
4	4000	G. P.
12	2000	G. P.
12	1600	A. P.
12	1000 (VB-3)	
24	1000	G. P.
40	500	G. P.

Max bomb load: ..... 25,000 lb

Space provisions only

GUNS

No.	Cal.	Rds. ea.	Loc.
2	.50	6000	Tail

CAMERAS

Vertical station for one of the following cameras:
K-17 6", 12", or 24" lens cone
K-22 6", 12", 24", 40", 48" lens cone
K-18 or K-38
K-24 7", 12", or 20" lens cone
K-19C night camera & accessories.

WEIGHTS

Loading	Lb	L. F.
Empty	152,300(E)	
Basic	153,490(E)	
Design	330,000	2.00
Combat	*228,900	
Max T. O.	†330,000	2.00
Max Land	240,000	2.00

(E) Estimated
*For Basic Mission
†Limited by strength

FUEL

Location	No. Tanks	Gal.
Wing, inbd. *	4	11,500
Wing, center	1	4630
Wing, outbd.	2	4060
Fuselage*	4	8480
*Self-sealing	Tot.	28,670

Spec. AN-F-58
Grade JP-3

OIL

Capacity(gal) 80
Spec. .....
Grade .....

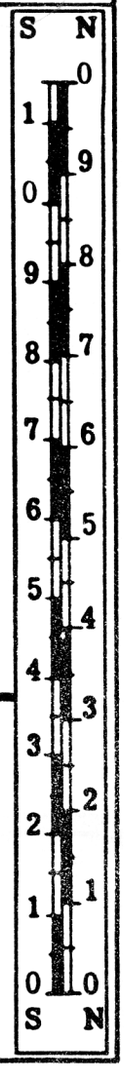
ELECTRONICS

VHF Command AN/ARC-3
Liaison AN/ARC-25
Interphone ..... AAF Combat
Bombing Radar ..... Type K-1
Loran AN/APN-9A
IFF ..... MK-X
Gun-Laying Radar .....
Omni Direct. Recvr. . AN/ARN-14
Glide Path AN/ARN-5B
Radar Beacon *AN/APN-12

*Set modified and used as Beacon

Loading and Performance - Typical Mission

CONDITIONS				BASIC MISSION	6000 LB BOMB MISSION
				I	II
TAKE-OFF WEIGHT			(lb)	330,000	330,000
Fuel at 6.0 lb/gal			(lb)	164,502	168,498
Military load (Bombs)			(lb)	10,000	6000
Wing loading			(lb/sq ft)	82.5	82.5
Stall speed (power off)			(kn)	117	117
Take-off ground run at SL	①	④	(ft)	5300	5300
Take-off clear 50 ft	①	④	(ft)	5630	5630
Rate-of-climb at SL		③	(fpm)	3000	3000
Time: SL to 41,400 ft		③	(min)	30	30
Service ceiling (100 fpm)		③	(ft)	43,500	43,500
COMBAT RANGE		⑤	(n. mi)	5270	5470
Avg cruising speed			(kn)	453	453
Cruising altitude (s)			(ft)	⑤	⑤
Total mission time			(hr)		
COMBAT RADIUS		⑤	(n. mi)	2660	2720
Avg cruising speed			(kn)	453	453
Cruising altitude (s)			(ft)	⑤	⑤
Total mission time			(hr)	11.9	12.18
COMBAT WEIGHT		⑥	(lb)	228,900	230,900
Combat altitude			(ft)	35,000	35,000
Combat speed		②	(kn)	526	526
Combat climb		②	(fpm)	2750	2750
Combat ceiling (500 fpm)		②	(ft)	49,400	49,200
Service ceiling (100 fpm)		②	(ft)	52,500	52,300
Service ceiling (100 fpm)		③	(ft)	51,200	51,000
Max rate-of-climb at SL		②	(fpm)	5300	5270
Max speed at 20,000 ft		②	(kn)	538	538
LANDING WEIGHT			(lb)	171,590	171,990
Ground roll at SL		④	(ft)	2575	2580
Total from 50 ft		④	(ft)	5500	5510



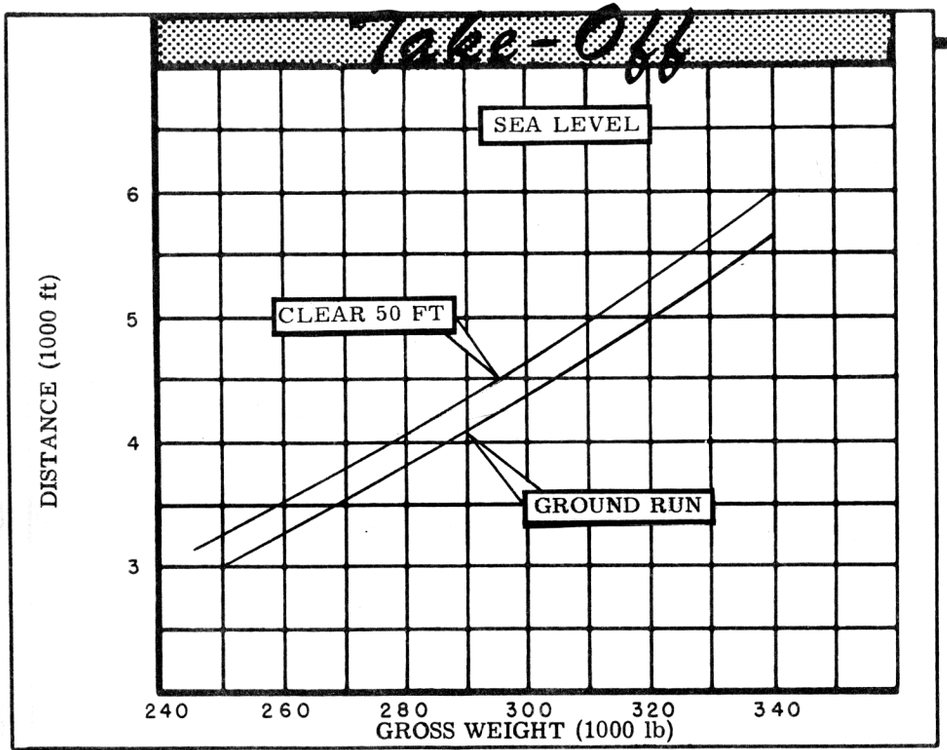
NOTES

① Take-off power
② Max power
③ Normal power
④ Take-off and landing distances are obtainable at sea level using normal technique. For airport planning add 25% to distances shown.
⑤ Detailed descriptions of the RADIUS & RANGE missions are given on page 6.
⑥ Radius mission if Radius is shown.

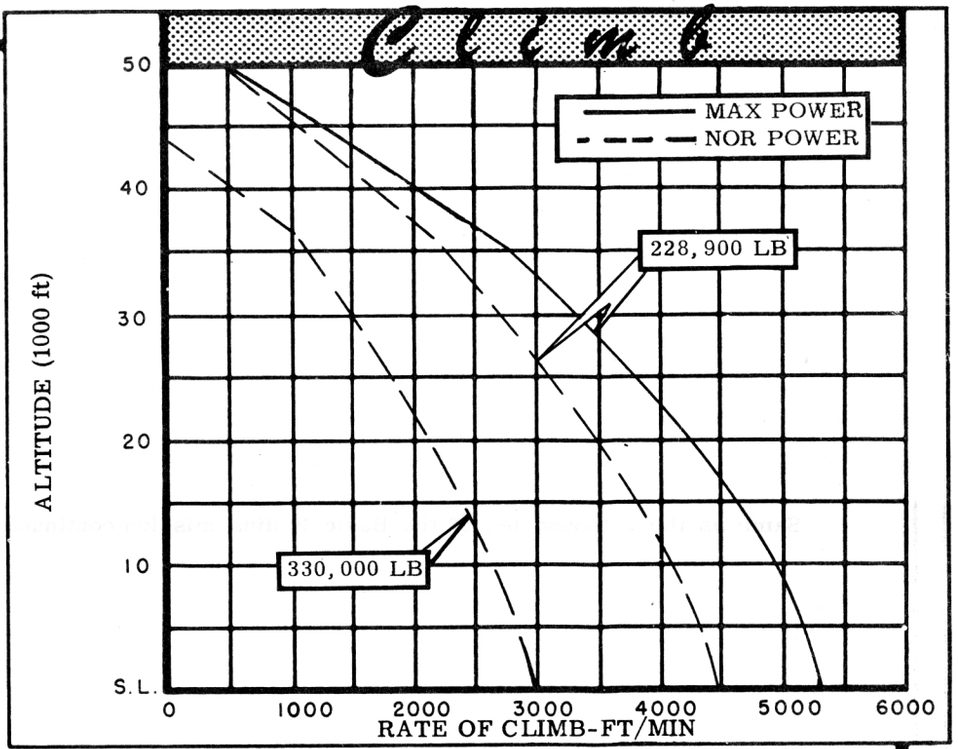
CONDITIONS:

(a) Performance Basis: Estimated data
(b) In computing Radius and Range, specific fuel consumptions have been increased 5% to allow for variations of fuel flow in service aircraft.
(c) Performance is based on powers shown on page 3.

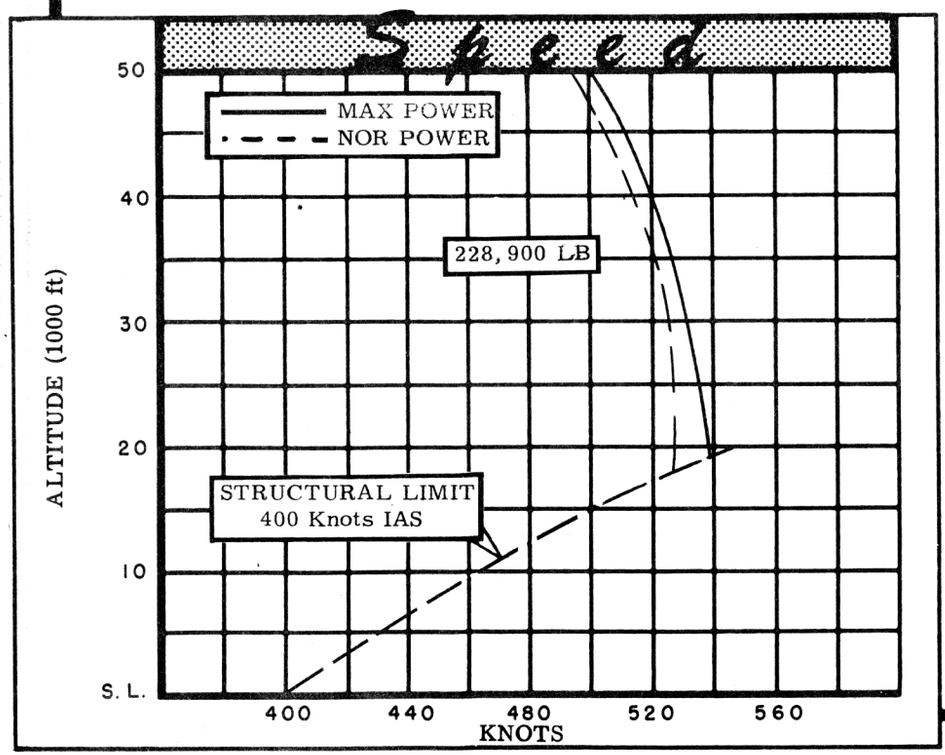
Take-Off



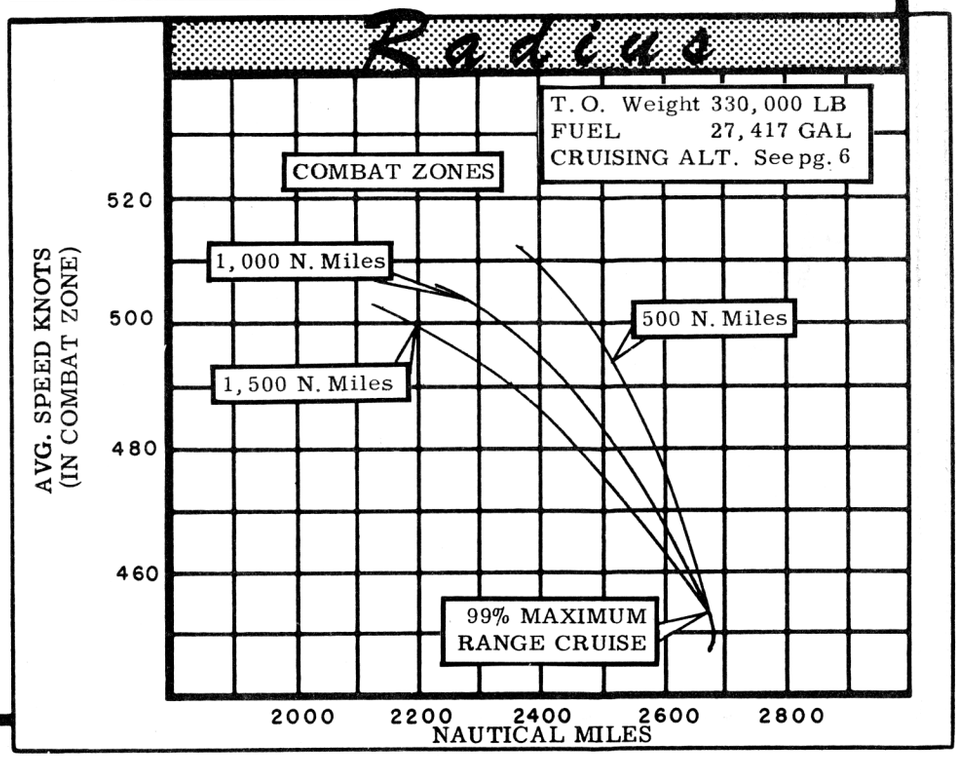
Climb



Speed



Radius



NOTES

FORMULA: RADIUS MISSION I

Take-off, climb on course to 41,400 ft. altitude at airplane speed for maximum rate of climb, cruise out at long range speeds increasing altitude with decreasing airplane weight, make normal power bomb-run to target at 49,700 ft., drop bombs, conduct normal power evasive action for 6 minutes, start cruise to home base at 49,700 ft alt. arriving over home base at 53,800 ft. altitude. Range free allowances are: 5 minutes normal power fuel consumption for starting engines and take-off, plus 6 minutes normal power evasive action, plus 10% of initial fuel for reserve.

FORMULA: RANGE MISSION I

Same as the outbound leg of the Basic Radius mission continued without dropping the bombs until 90% of the initial fuel has been used at 50,700 ft. alt., leaving 10% of fuel reserve for combat, evasive action, landing reserve, or other considerations for which no distance credit is allowed.

FORMULA: RADIUS MISSION II

Same as the Basic Radius mission except, 10,000 lb bomb load is replaced by 6,000 lb bomb load and additional fuel. Altitude at end of mission is 54,600 ft.

FORMULA: RANGE MISSION II

Same as Basic Range formula except 10,000 lb bomb load is replaced with 6,000 lb bomb load and additional fuel. Altitude at the end of the mission is 51,000 ft.

GENERAL DATA

(a) Performance basis: Manufacturer's estimated data.

(b) Performance is based on powers shown on page 3 which were obtained directly from the variable exit tail pipe version of the Pratt-Whitney XJ57-P-1 engine specification No. A-1620, dated 26 May 1949.